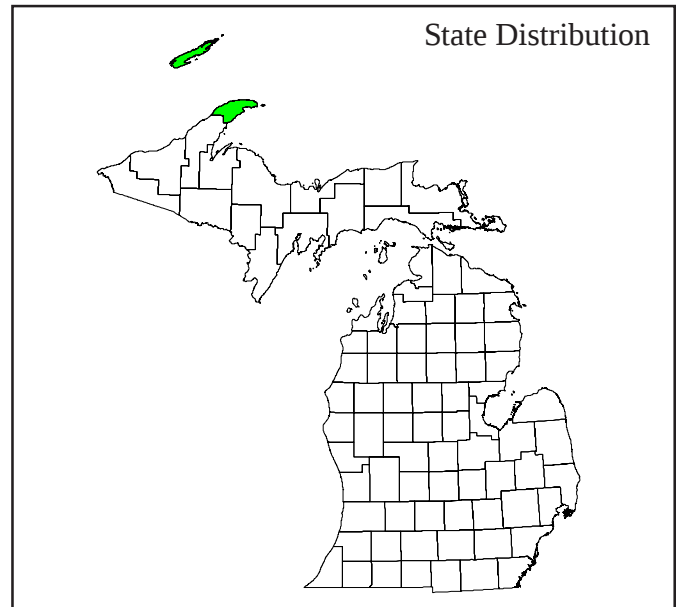


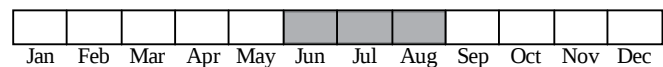


Photo by Susan R. Crispin



State Distribution

Best Survey Period



Status: State threatened

Global and state rank: G4G5/S2

Other common names: three-toothed saxifrage

Family: Saxifragaceae (saxifrage family)

Synonyms: *Leptasea tricuspidata* (Rottb.) Haw.

Taxonomy: Extensive molecular studies have been conducted to determine relationships within the genus *Saxifraga* (Soltis et al. 1996), a large and diverse group.

Range: This circumboreal and arctic-alpine saxifrage is distributed in North America from Alaska to Labrador, ranging south through British Columbia to Washington state, Alberta, southern Manitoba, Quebec, and the north shore of Lake Superior where it occurs sparingly (Calder and Savile 1959). It is considered rare in Alberta, Labrador, and Quebec (NatureServe 2007).

State distribution: In Isle Royale National Park, *Saxifraga tricuspidata* is known from just 10 sites, ranging from the main island (Isle Royale) to Passage Island at the northern limit of the Isle Royale archipelago, including two sites on or near the main island known only from historical records.

Recognition: Prickly saxifrage, which sometimes grows in small, dense mats, produces tufts of **crowded, narrowly oblong basal leaves (including persistent, sheathing, brown older leaves) that are about 1-2 cm long and have three, firm spine-tipped teeth at their apex, with the leaf margins otherwise entire (smooth or untoothed).** The flowering stem ranges from about 1-2 dm in height, with reduced, scattered leaves along its length and terminating in a branched inflorescence bearing **several white, five-petaled flowers usually dotted with red or purple.** *S. tricuspidata* is most likely to be confused with the related *S. paniculata* (known widely in manuals as *S. aizoön* Jacq., a later name), a similar arctic species that also occurs on Isle Royale, but which can be easily distinguished by its round basal rosettes of much wider, obovate leaves characterized by their finely toothed margin with conspicuous teeth that bear white, lime-encrusted pores at their tip.

Best survey time/phenology: Most observations of this species have occurred from late May through August, with flowering observed from late-May to early July, and fruiting observed from early July through August. Similar to the related *S. paniculata*, the optimal survey period for this species is June through August, though it likely can be sought somewhat earlier or later by experienced botanists.



FQI Coefficient and Wetland Category: 10, UPL

Habitat: In Isle Royale National Park, *S. tricuspidata* typically grows in crevices, depressions and other exposed bedrock habitats along Lake Superior that have a predominance of lichen cover, including glade-like areas (e.g. juniper-bearberry openings) along or near the shoreline. Associated plants include such species as *Woodsia ilvensis* (rusty woodsia or rusty cliff fern), *Festuca saximontana* (fescue), *Selaginella rupestris* (rock spikemoss), *Danthonia spicata* (poverty grass), *Artemisia campestris* (wormwood), *Achillea millefolium* (yarrow), *Potentilla tridentata* (three-toothed cinquefoil), *Saxifraga virginensis* (early saxifrage), *Juniperus horizontalis* (creeping juniper), *Poa glauca* (bluegrass), *Viola adunca* (sand violet), and *Draba arabisans* (rock whitlow-grass). Elsewhere throughout its range, it commonly occupies sandy, gravelly or rocky habitats.

Biology: *S. tricuspidata* is a perennial, flowering in June and early July, and fruiting through August. Shoots may persist for several years before flowering (Warming 1909). Similar to *S. paniculata*, this species is able to self-pollinate, as documented by Kevan (1972), who employed insect excluders in experimental treatments and also noted that insect visitors were rare in observations of open pollinated plants. McGuire and Armbruster (1991), in an experimental test of the reproductive interactions between the co-occurring and sequentially blooming *S. reflexa* and *S. tricuspidata*, found that syrphid flies (Diptera: Syrphidae) comprised the majority of insect visitors and likely pollinators, with halictid bees (Hymenoptera: Halictidae) also observed and possibly playing a role. Germination in *S. tricuspidata* is largely controlled by day length, thus the requirement for long days helps to inhibit premature germination following dispersal in the fall (Densmore 1997).

Conservation/management: Colonies of this species in Isle Royale National Park do not appear to be particularly threatened, especially those that occur on smaller islands within the archipelago that receive little visitation by recreationists. One population is contained within Passage Island Research Natural Area. Conservation of this plant will likely be best achieved by minimizing human disturbance of its rocky shoreline habitat. In particular, foot traffic and development of adjacent uplands should be avoided, and occasional

monitoring is warranted to periodically check populations in higher use areas.

Research needs: General life history studies would likely provide the most useful information for conserving and managing Michigan populations, and additional field inventory is also warranted in selected mainland areas to identify new populations.

Related abstracts: Volcanic bedrock lakeshore, pearlwort, encrusted saxifrage, alpine bluegrass, downy oatgrass

Selected references:

- Calder, J. A. and D. B. O. Savile. 1959. Studies in Saxifragaceae - II. *Saxifraga* Sect. *Trachyphyllum* in North America. *Brittonia* 11: 228-249.
- Densmore, R.V. 1997. Effect of day length on germination of seeds collected in Alaska. *Am. J. Bot.* 84: 274-278.
- Galløe, O. 1909. Saxifragaceae. 2. The biological leaf-anatomy of the Arctic species of *Saxifraga*. *Meddelelser om Grønland* 36: 237-294.
- Kevan, P. 1972. Insect pollination of high arctic flowers. *J. Ecol.* 60: 831-847.
- McGuire, A.D. and W.S. Armbruster. 1991. An experimental test for reproductive interactions between two sequentially blooming *Saxifraga* species (Saxifragaceae). *Am. J. Bot.* 78: 214-219.
- NatureServe. 2007. NatureServe Explorer: an online encyclopedia of life [web application]. Version 6.1. NatureServe, Arlington, Virginia. Available <http://www.natureserve.org/explorer>. (Accessed: October 15, 2007).
- Scoggan, H. J. 1978. The Flora of Canada. *Nat. Mus. Nat. Sci. Publ. Botany*. 4 vols. 1711 pp.
- Soltis, D.E., R.K. Kuzoff, E. Conti, R. Gornall, and K. Ferguson. 2007. *matK* and *rbcL* gene sequence data indicate that *Saxifraga* (Saxifragaceae) is polyphyletic. *Am. J. Bot.* 83: 371-382.



Warming, E. 1909. Saxifragaceae. 1. Morphology and biology. *Meddelelser om Grønland* 36: 169-236.

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